

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

09/804,283

F0601

---

**REMARKS**

Claims 1-26 are currently pending in the subject application and are presently under consideration. A clean version of all pending claims is found at pages 2-6 of this Reply. No claims have been amended herein.

Applicants' representative acknowledges with appreciation the Examiner indicating that claims 10, 18, 22, and 23 would be allowed if recast in independent form so as to include the limitations of respective base claim(s) and any intervening claims. Applicants' representative reserves the option to recasts these claims in such manner at a later date if necessary; however, it is believed that the rejected claims are allowable over the cited references for at least the reasons noted below.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments herein and the Statement of Common Ownership in Section II below.

**I. Rejection of Claims 1, 4-9, 11-17, 20, and 21 Under 35 U.S.C. §102(e)**

Claims 1, 4-9, 11-17, 20, and 21 stand rejected under 35 U.S.C. §102(e) as being anticipated by Hause *et al.* (US Patent 6,166,354). This rejection should be withdrawn for at least the following reasons. Hause *et al.* does not disclose each and every element as set forth in independent claims 1 and 20 of the subject application.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the...claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The present invention relates to a system that facilitates monitoring sheet resistivity of a layer on a wafer in order to control rapid thermal annealing (RTA) process(es). The system comprises one or more sheet resistivity analyzing components that analyze sheet resistivity of one or more portions of the layer on which RTA

09/804,283

F0601

components perform the RTA process. The system further includes a feedback generator that accepts sheet resistivity data from the analyzing components and produces feedback information that can be employed to control the one or more RTA components. (See, e.g., page 3, lines 24-31.) Independent claim 1 recites the elements of “one or more sheet resistivity analyzing components adapted to analyze the sheet resistivity of one or more portions of the layer upon which the RTA components can perform RTA; and a feedback generator adapted to accept sheet resistivity data from the analyzing component and to produce a feedback information operable to control the one or more RTA components.” Independent claim 20 recites similar language. “Measurements including the potential gradient, the current, the current density and the area employed in determining the current density can be performed, in one example aspect of the present invention, by a four point probe. Since current may not flow uniformly through a layer, in one example aspect of the present invention, multiple measurements of potential gradient, the current, the current density and the area employed in determining the current density can be performed, with such measurements then being subjected to numerical methods including, but not limited to, averaging, regression analysis, statistical analysis and determining maximums and minimums to produce R<sub>s</sub> measurements.” (Page 8, lines 11-19.) Thus, it is readily apparent that the presently claimed invention facilitates analysis of sheet resistivity data to permit enhanced control of an RTA process. Furthermore, the instant application discloses analyzing the sheet resistivity of a layer. Hause *et al.* fails to disclose such aspects of the present invention as recited in independent claims 1 and 20.

Hause *et al.* describes a system wherein surface photovoltage (SPV) is measured to determine whether an RTA process is complete. The SPV measurement device 140 measures surface charge and is incapable of measuring current density throughout an entire layer. Contrary to the Examiner’s assertion, the “sheet analyzing device 140” is not a “sheet resistivity analyzing component” as set forth in claims 1 and 20. Rather, the SPV measurement device 140 merely collects information “indicative of surface charge and, therefore, annealing and, indirectly, temperature within the RTA chamber 100.” (Column 5, lines 2-4.) Furthermore, the “control circuit 160” of Hause *et al.* is not

09/804,283

F0601

***"feedback generator adapted to accept sheet resistivity data"*** as set forth in claims 1 and 20. The control circuit 160 cannot receive sheet resistivity data because the SPV measurement device 140 cannot measure sheet resistivity. Thus, Hause *et al.* does not disclose each and every element of the present invention as set forth in the subject claims.

In view of the above comments, it is readily apparent that Hause *et al.* does not anticipate or make obvious the subject invention as recited in independent claims 1 and 20, and claims 4-9, 11-17, and 21, which depend respectively there from. Therefore, this rejection should be withdrawn.

## **II. Rejection of Claims 2, 3, 19, and 24-26 Under 35 U.S.C. § 103(a)**

Claims 2, 3, 19, and 24-26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hause *et al.* (US Patent 6,166,354) in view of Aronowitz *et al.* (US Patent 5,756,369). Withdrawal of this rejection is respectfully requested in view of the following comments. As noted above, Hause *et al.* does not anticipate or make obvious applicants' claimed invention, and Aronowitz *et al.* does not make up for the deficiencies of Hause *et al.*

Moreover, it is noted that Hause *et al.* does not qualify as citable art against the subject application in view of 35 U.S.C. §103(c), reproduced below:

(c) Subject matter developed by another person, which qualifies as prior art only under subsection (e), (f), and or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

The subject application and Hause *et al.* (U.S. Patent 6,166,354) were, at the time the invention of the subject application was made, owned and/or subject to an obligation of assignment to the same entity (Advanced Micro Devices, Inc.). See Reel 011603, Frame 0412. Therefore, Hause *et al.* is not citable art against the present application in an obviousness rejection.

09/804,283

F0601

It is readily apparent from the above comments that Hause *et al.* does not anticipate the subject invention; however in the event the Examiner believes such reference still qualifies as prior art pursuant to 35 U.S.C. §102(a), applicants' representative can provide a declaration under 37 CFR 1.131 swearing behind Hause *et al.*

As noted above, Aronowitz *et al.* does not make up for the deficiencies (let alone the absence of) Hause *et al.* as a reference. Therefore, this rejection should be withdrawn.

### **III. Objection to Claims 10, 18, 22, and 23**

Claims 10, 18, 22, and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. It is respectfully submitted that this objection should be withdrawn for at least the following reasons. Claims 10, 18, 22, and 23 depend from independent claims 1 and 20, which, in view of the comments herein, are believed to be in condition for allowance.

09/804,283

F0601

CONCLUSION


The present application is believed to be in condition for allowance in view of the above comments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

AMIN & TUROCY, LLP

  
Himanshu S. Amin  
Reg. No. 40,894

AMIN & TUROCY, LLP  
24<sup>TH</sup> Floor, National City Center  
1900 E. 9<sup>TH</sup> Street  
Cleveland, Ohio 44114  
Telephone (216) 696-8730  
Facsimile (216) 696-8731

FAX RECEIVED  
AUG - 5 2003  
TECHNOLOGY CENTER 2800